

TRANSMITTAL LETTER TO THE UNITED STATES
DESIGNATED/ELECTED OFFICE (DO/EO/US)
CONCERNING A FILING UNDER 35 U.S.C. 371

INTERNATIONAL APPLICATION NO.

PCT/JP98/02675

INTERNATIONAL FILING DATE

JUNE 17, 1998

PRIORITY DATE CLAIMED

TITLE OF INVENTION BROADCASTING METHOD AND BROADCAST SIGNAL RECEIVING APPARATUS

APPLICANT(S) FOR DO/EO/US Yoshito NEJIME, Kimiya YAMAASHI

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a FIRST submission of items concerning a filing under 35 U.S.C. 371.
2. ☐ This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371.
3. ☐ This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).
4. ☐ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.
5. ☒ A copy of the International Application as filed (35 U.S.C. 371(c)(2))
 - a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☒ has been transmitted by the International Bureau.
 - c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).
6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).
7. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3))
 - a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
 - b. ☐ have been transmitted by the International Bureau.
 - c. ☐ have not been made; however, the time limit for making such amendemnts has NOT expired.
 - d. ☐ have not been made and will not be made.
8. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).
9. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)).
10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)).

Items 11. to 16. below concern document(s) or information included:

11. ☐ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.
12. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.
13. ☐ A FIRST preliminary amendment.
☐ A SECOND or SUBSEQUENT preliminary amendment.
14. ☐ A substitute specification.
15. ☒ A change of power of attorney and/or address letter.
16. ☒ Other items or information:

International Application as Filed
International Search Report
Amended sheets under Article 34 w/English translation
Figs. 1-11

17. ☒ The following fees are submitted:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)):

Search Report has been prepared by the EPO or JPO	\$ 840.00	840.00
International preliminary examination fee paid to USPTO (37 CFR 1.482)	\$ 670.00	
No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))	\$ 490.00	
Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO	\$ 700.00	
International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)	\$ 96.00	

ENTER APPROPRIATE BASIC FEE AMOUNT = \$ 840.00

Surcharge of \$130.00 for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492(e)). \$


CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
total claims	21 - 20 =	0	X\$18.00	\$
dependent claims	8 - 3 =	5	X\$78.00	\$ 390.00
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$260.00	\$ 260.00
TOTAL OF ABOVE CALCULATIONS =				\$1,490.00
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				\$
SUBTOTAL =				\$1,490.00
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$
TOTAL NATIONAL FEE =				\$1,490.00
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property.				\$ 40.00
TOTAL FEES ENCLOSED =				\$1,530.00
				Amount to be: refunded \$
				charged \$

- a. ☒ A check in the amount of \$ 1,530.00 to cover the above fees is enclosed.
- b. ☐ Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.
- c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 01-2135. A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

ANTONELLI, TERRY, STOUT & KRAUS, LLP
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SIGNATURE: 
Carl I. Brundidge
NAME
29,621
REGISTRATION NUMBER



PCT
410 Rec'd PCT/PTO 07 JAN 2000

501.37519X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Y. NEJIME, et al

Serial No.: 09/380,784

Filed: September 9, 1999

For: BROADCASTING METHOD AND BROADCAST SIGNAL
RECEIVING APPARATUS

Group:

Examiner:

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents
Washington, D.C. 20231

January 7, 2000

Sir:

The following preliminary amendments and remarks are respectfully submitted in connection with the above-identified application.

IN THE SPECIFICATION:

Page 1, line 6, delete "contents of"; same line 6, after "information" insert --,--; same line 6, after "picture" insert --,--;

line 7, after "network" insert --; and--; same line 7, after "particularly," insert --the invention relates--;

line 11, after "media" insert --,-- (both occurrences) ;

line 19, after "procedure" insert --,--.

Page 4, line 3, delete "band" insert --period--;

line 9, delete "by referring to the following diagrams" insert --with reference to the accompanying drawings,--;

line 12, delete "shows the system configuration" insert --is a block diagram--;

line 15, after "3" insert --is a diagram which--;

line 17, after "4" insert --is a diagram which--;

line 22, delete "Fig. 7 shows" insert --Figs. 7(A) to 7(D) are diagrams which show--.

Page 5, line 1, after "8" insert --is a diagram which--;
same line 1, delete "2" insert --an example of broadcast information, and Figs. 8(A) and 8(B) are diagrams which illustrate--;

line 4, delete "shows the system configuration" insert --is a block diagram--;

line 7, after "10" insert --is a diagram which--;

line 10, after "11" insert --is a diagram which--;

line 13, delete "explains" insert --will be referred to in order to explain--;

line 15, after ",", insert --the--;

line 19, delete "the" (second occurrence) insert --an--; same line 19, after "infrastructure" insert --,--;

line 21, after "information" insert --,--;

line 23, after "and" insert --a--.

Page 6, line 2, delete "to display" insert --and
displays--;

line 7, after "203" insert --,--; same line 7, after
"respectively" insert --,--;

line 14, delete "to be the length of" insert --by--;

line 15, after "900" insert --to correspond to a
length--;

line 16, after "a" insert --predetermined--;

line 18, delete ", to thereby" insert --, which is
to--;

line 19, after "to" insert --various--;

line 21, after "means" insert --,--;

line 24, after "information" insert --and--;

line 25, delete "the" (first occurrence); same line
25, delete "the" (second occurrence) insert --a--.

Page 7, line 3, after "of" insert --the--;

line 10, delete "pair rental" insert --parental--;

line 11, delete "pair rental" insert --parental--;

line 12, after "work" insert --which may be--;

line 17, after "information" insert --, typically--;
same line 17, delete "typically";

line 19, delete "a time to watch and listen" insert
--the time of viewing--;

line 20, delete "to"; same line 20, delete "pair

Page 13, line 6, after "that" insert --the--;

line 23, delete "of" (second occurrence) insert

```
--in--;
```

line 24, after "information" insert --,--.

Page 14, line 16, delete "only one" insert --single--.

Page 16, line 20, delete "is" insert --will be--.

Page 17, line 5, delete "is" insert --will be--; same

```
line 5, delete "by";
```

```
line 6, delete "referring" insert --with
```

```
reference--;
```

line 10, after "means" insert `--,--;`

line 11, after "signal" (second occurrence) insert

--,--;

line 12, after "stream" insert --,--;

line 13, after "101" insert --,--;

line 16, after "or" (second occurrence) insert

--to--.

Page 18, line 14, after "ended" insert --,--;

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line 15, delete "is" insert --will be--;
```

line 16, delete "by referring" insert --with

reference--.

Page 19, line 3, after "108" insert --,--;

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line 7, after "107" insert --,--;
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line 15, delete "As" insert --When--.
```

Page 20, line 12, after "plat" insert --it--; same line

line 13, delete "delivered" insert --provided--;
line 14, delete "using" insert --means of--;
line 15, delete ",".

Page 29, line 4, delete "is" insert --will be--; same
line 4, delete "as follows";

line 6, after "thereto" insert --, both of which
are--;

line 13, after "and" insert --to--;
line 23, delete "band".

Page 30, line 8, after "means" insert --,--; same line 8,
delete "a" insert --the--;

line 9, after "embodiment" insert --,--;
line 10, delete "is" insert --will be--;
line 15, delete "the";
line 17, after "and" insert --is--.

Page 31, line 5, delete ", adjusting" insert --and
adjusts--;

line 9, delete "much" insert --greatly--;
line 10, after "out" insert --the--;
line 11, delete "a" insert --the-- (both
occurrences);

line 18, delete "As" insert --When--;
line 21, after "back" insert --the--; same line 21,
after "of" insert --the--;
line 24, after "is" insert --to be--.

Page 32, line 9, delete "Industrial Applicability";

line 14, after "using" insert --,--; same line 14,
after "example" insert --,--;

line 15, after "media" insert --,--.

IN THE CLAIMS:

Please amend the claims as follows:

Claim 1, line 2, delete "band" insert --period--.

Claim 3, line 4, after "and" insert --is--.

Claim 4, line 11, after "with" insert --a--.

Claim 5, line 4, delete "stopped."

Claim 6, line 4, delete "stopped".

Claim 8, line 11, after "with" insert --a--.

Claim 9, line 2, after "if" insert --execution of--; same
line 2, delete "executed" insert --completed--;

line 3, after "advance" insert --further--.

Claim 11, line 4, delete "band" insert --period--;

line 11, delete "of" insert --wherein--;

line 12, delete "interlocking"; same line 12, after
"information" insert --is interlocked--;

line 14, after "with" insert --a--.

Claim 12, line 6, after "with" insert --a--;

line 8, delete "to be" insert --and--;

line 10, delete "to be" insert --and--.

Claim 14, line 4, after "with" insert --a--.

Claim 15, line 3, after "with" insert --a--;

line 4, delete "stopped";

line 10, delete "is" insert --are--.

Claim 16, line 3, after "with" insert --a--;

line 4, delete "resuming" insert --resumes--; same

line 4, delete "stopped".

Claim 18, line 2, after "if" insert --execution of--;

line 3, delete "executed" insert --completed--;

line 4, after "advance," insert --further--.

Claim 20, line 4, after "determining" insert --a--;

IN THE ABSTRACT OF THE DISCLOSURE:

Please replace the original abstract with the following
new abstract:

--ABSTRACT

A broadcasting method and a broadcast signal receiving apparatus is provided wherein auxiliary information, such as video and audio data, for supplementing broadcast information presented through a broadcasting network in an interlocked manner can be watched and listed to by the viewer. Broadcast information received from a broadcasting network is temporarily stored in a storage means of a broadcast signal receiving apparatus and a recording medium for storing auxiliary information used as a supplement to the broadcast information is mounted on the broadcast signal receiving

apparatus. The broadcast information and the auxiliary information are then played back in an interlocked manner with a predetermined timing. As a result, a function to present information which can not be accommodated in a broadcast frame and a parental function can be implemented.--

REMARKS

The specification has been amended to correct errors of a typographical and grammatical nature.

The claims have also been amended to more clearly describe the features of the present invention, and the abstract has been replaced by a new abstract, thereby correcting errors of a grammatical nature and providing an abstract in proper format.

Also submitted herewith is a proposed amendment to the drawings, wherein Figs. 7 and 8 have been amended at this time. Upon receipt of the approval of the amendment to the drawings and receipt of a Notice of Allowance, the proposed drawing corrections will be effected in accordance with present practice.

Entry of the preliminary amendments and examination of the application is respectfully requested.

To the extent necessary, applicants petition for an extension of time under 37 CFR 1.136. Please charge any shortage in the fees due in connection with the filing of this

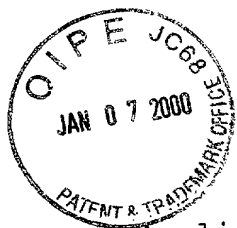
paper, including extension of time fees, to Deposit Account
No. 01-2135 (501.37519X00) and please credit any excess fees
to such deposit account.

Respectfully submitted,



Carl I. Brundidge
Registration No. 29,621
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501.37519X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Y. NEJIME, et al

Serial No.: 09/380,784

Filed: September 9, 1999

For: BROADCASTING METHOD AND BROADCAST SIGNAL
RECEIVING APPARATUS

Group:

Examiner:

PROPOSED AMENDMENT TO THE DRAWINGS

Assistant Commissioner for Patents
Washington, D.C. 20231

January 7, 2000

Sir:

It is proposed that the drawings in the above-identified application be amended in accordance with the attached red-lined print, and approval of these drawing corrections is respectfully requested at this time.

Upon receipt of the approval of the amendment to the drawings and receipt of the official Notice of Allowance, the drawing amendments will be effected in accordance with the new procedures set forth in 1017 OG 4, April 6, 1982.

Respectfully submitted,

Carl I. Brundidge
Registration No. 29,621
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CIB/DRA/cee
Attachments
(703) 312-6600

09/380,784-00000000

FIG. 7 (A)

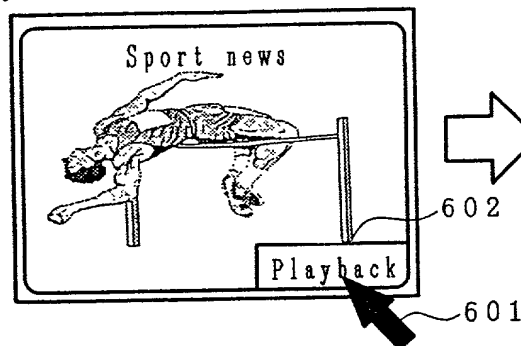


FIG. 7 (B)

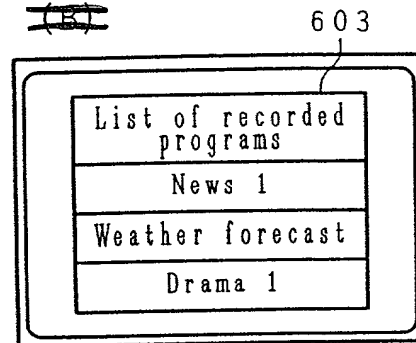


FIG. 7 (C)

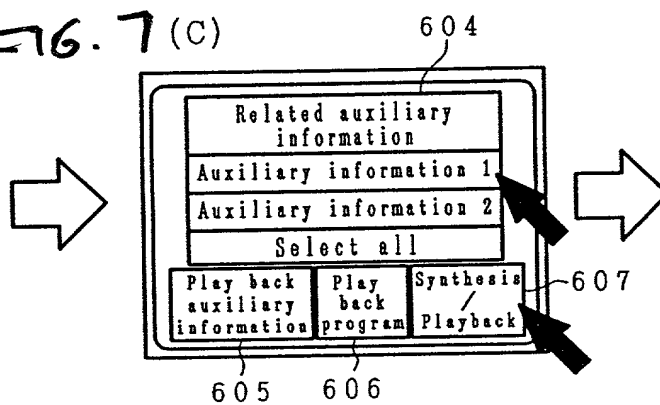


FIG. 7 (D)

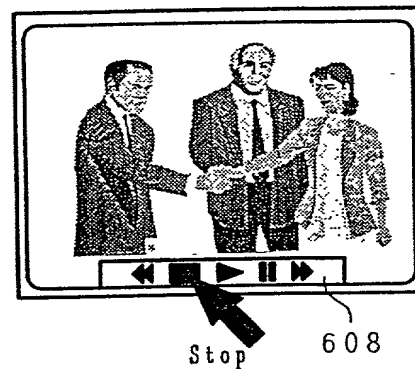


FIG. 8

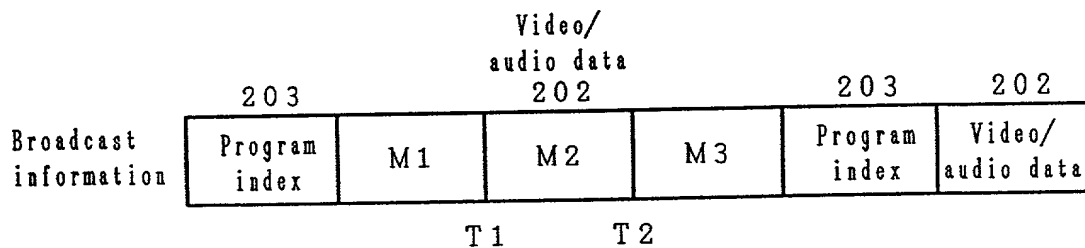


FIG. 8 (A) Insertion type synthesis

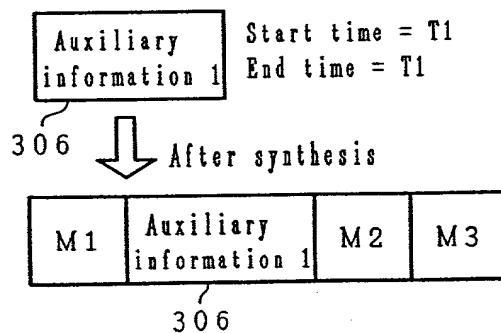
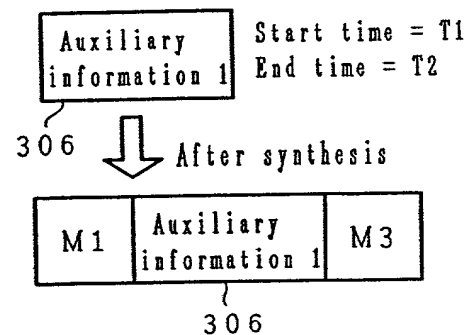


FIG. 8 (B) Replacement type synthesis



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**BROADCASTING METHOD AND
BROADCAST SIGNAL RECEIVING APPARATUS**

Technical Field

The present invention relates to a broadcasting method and a broadcast signal receiving apparatus for presenting contents of video information such as a picture through a broadcasting network, more particularly, to a broadcasting method and a broadcast signal receiving apparatus wherein information presented through a broadcasting network and auxiliary information presented through other media such as package media can be watched and listened to in an interlocked manner.

Background Art

In the conventional system, edited video / audio information is broadcasted during a broadcasting band of time set as a program. Thus, the viewer can watch and listen to only part of such video / audio information actually broadcasted by a broadcasting station. For example, in the case of a news program, only part of gathered video information can be watched and listened to. In the case of a movie program, on the other hand, only part of a movie presented at a movie theater can be watched during the period

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of the movie program usually shorter than the show time of the movie at the movie theater.

Meanwhile, in recent years, there has been implemented a data broadcasting system whereby text data related to video / audio information is broadcasted as additional data to the video / audio information by appending the text data in the blanking signal of the video information. For example, systems called IT - vision and Intel - Intericast are known. In these data broadcasting systems, text data is described in a predetermined language such as an HTML (Hyper Text Markup Language) in a signal period of time of a video signal not used in video transmission to be broadcasted along with the video signal at the same time. An example of the signal period of time is an VBI (vertical blanking interval). In the broadcast signal receiving apparatus, incoming video / audio information and text data are separated from each other. The video / audio information is played back as it is while the text data is displayed on a screen of a computer as a message related to the video information such as a text, a static picture or a graphic. In this way, the viewer is capable of not only watching and listening to the video / audio information but also obtaining information on its program at the same time.

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In the data broadcasting system whereby auxiliary information is broadcasted by using the VBI with a low information transmission capacity, however, there is a limit on the amount of auxiliary information that can be transmitted at a time, making it impossible to broadcast a large amount of data such as video information as auxiliary information. While video information and related information are broadcasted at the same time, they are independent of each other, thus, difficult to utilize related information in a process of synthesizing a video information such as a search for original information based on the related information and correlation of a scene cut out from a movie with the original movie.

Disclosure of the Invention

It is an object of the present invention to provide the viewer with video / audio data which can not be included in broadcast information so far as an auxiliary information by using a means adopting a broadcasting procedure different from the normal broadcasting procedure wherein the auxiliary information is synthesized automatically in the broadcast signal receiving apparatus with the broadcast information to generate final information which appears to the viewer as if the final information had been broadcasted as a continuous single program.

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According to the present invention, broadcast information received by the broadcast signal receiving apparatus during a predetermined program band of time is played back in a manner interlocked with auxiliary information received in advance and held in the receiving apparatus.

Brief Description of Drawings

Embodiments of the present invention will be described by referring to the following diagrams wherein:

Fig. 1 schematically shows a package media interlocked broadcasting / watching / listening system;

Fig. 2 shows the system configuration of a 1st embodiment implementing a broadcast signal receiving apparatus;

Fig. 3 shows the data format of broadcast information received by the 1st embodiment;

Fig. 4 shows the data format of auxiliary information received by the 1st embodiment;

Fig. 5 shows a typical data format of an auxiliary information control table;

Fig. 6 shows a typical video recording control table;

Fig. 7 shows a sequence of user operations;

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Fig. 8 shows 2 different algorithms adopted by a video synthesizing unit for synthesizing broadcast information and auxiliary information;

Fig. 9 shows the system configuration of a 2nd embodiment implementing a broadcast signal receiving apparatus;

Fig. 10 shows the data format of broadcast information and auxiliary information received by the 2nd embodiment; and

Fig. 11 shows the data format of auxiliary information handled in a 3rd embodiment.

Best Mode for Carrying Out the Invention

Fig. 1 explains the concept of a package media interlocked broadcasting / watching / listening system. In the system, contents of a broadcast program are created by a contents provider 900 and the contents are partly delivered to a broadcasting station 901 as broadcast information 201. The broadcasting station 901 broadcasts the broadcast information 201 through the infrastructure such as a satellite, a ground wave facility or a CATV. The contents provider 900 also distributes other information related to the broadcast information 201, through the Internet and package media, as auxiliary information 301. The viewer side (at a home 902) receives the broadcast

information 201 and the auxiliary information 301 through a broadcast signal receiving apparatus 100 to display the information on a monitor. In the package media interlocked broadcasting / watching / listening system, auxiliary information 301 supplements broadcast information 201. Both auxiliary information 301 and broadcast information 201 include indexes 305 and 203 respectively for associating the former with the latter and for specifying how and with what timing the former supplements the latter.

The following is a description of an example to which the package media interlocked broadcasting / watching / listening system is applied.

When distributing the contents of a large size theater movie, scenes in the movie are cut out to be the length of the broadcast information contents provider 900 adjusted to a broadcast time. The contents provider 900 delivers the movie-through-the-cutting-process to a broadcasting station, as broadcast information, to thereby be broadcasted to homes. On the other hand, the cut out scenes are sent to the homes as auxiliary information through other means such as the Internet, package media and data broadcasting systems. A broadcast signal receiving apparatus at each home receives the broadcast information and the auxiliary information, thereafter, displays both the pieces of information on a monitor in the interlocked

manner based on indexes appended to both. This enables the viewer to watch and listen to the contents of the complete movie. In a news program, part of news not broadcasted can also be presented to the viewer as auxiliary information. As a result, there is born a new information distribution business for distributing and delivering more detailed subjects, which are not broadcasted as a news program, as auxiliary information in the way described above.

The package media interlocked broadcasting / watching / listening system can also be applied to pair rental control. A pair rental control function prevents pictures and expressions of the original work inappropriate for juvenile viewers from being displayed. To be more specific, portions of the original work for general viewers are broadcasted as broadcast information whereas scenes for adult viewers are only delivered separately as auxiliary information by using typically package media. This allows the viewer to select whether or not such auxiliary information is to be displayed at a time to watch and listen to a broadcast program, implementing the pair rental control function to appropriately exclude such scenes from displayed information. Thus, chances that scenes inappropriate for juvenile viewers are inadvertently watched and listened to are eliminated.

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Moreover, the package media interlocked broadcasting / watching / listening system can also be applied to broadcast advertisements (CMs). To put it in detail, by delivering a CM such as a product advertisement as auxiliary information, the CM can be played back in synchronization with a program properly. As a result, the number of opportunities in which a product advertisement is presented to the viewer in addition to CMs included in broadcast information can be increased. By setting an auxiliary information CM time in addition to the traditional CM time, the broadcasting station is capable of increasing the advertisement revenue. In addition, the CM provider is capable of appending a CM relevant to a program to the program broadcasted by a broadcasting station that does not broadcast the CM. For example, an index of 'the name of a program' included in broadcast information can be used to play back an advertisement of a product such as a car appearing in the program from a CD-ROM with timing specified by the index. In this way, the CM provider is capable of letting the viewer watch and listen to a CM even if the broadcast station does not broadcast the CM.

The following is a description of an application of computer graphics to the package media interlocked broadcasting / watching / listening system. If the playback apparatus includes a processor that is capable of executing

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a program, auxiliary information played back in a manner interlocked with an operation to display broadcast information will not be limited to video and audio data described above. For example, a CG program, a program displaying computer graphics (CG), can be provided as auxiliary information. That is, a CG program can be delivered as auxiliary information by using package media. Invocation of a CG program is triggered by index information included in broadcast information. By providing a parameter required for a CG program from a broadcast information, a CG character moving synchronously with the broadcasting is let appear on a displayed screen of the broadcast information. Such an application is particularly effective for programs such as an animation one. The viewer is capable of carrying out operations such as replacing some characters appearing in an animation program with CG characters selected from package media. If the viewer is also capable of creating a CG character by itself, the viewer will be able to enjoy to see a CG character created by itself appearing and acting in a broadcasted program. Such a joy can not be realized by the conventional TV broadcasting.

In the mean time, standardization including one known as MPEG4 is making progress in recent years. In the video and audio encoding field, a technology called content based encoding has been implemented. The content based encoding

is a technology wherein video materials (or objects) included in video data is encoded independently and, on the receiving side, the objects are decoded individually and finally synthesized before being displayed. In this technology, since only information on objects that change in the video data is transmitted, not only is it possible to considerably reduce the amount of information to be transmitted, but other merits can also be reaped by a video data producer. The other merits include a capability of creating entirely new video data by combination of pieces of video data of objects photographed individually. With this content based encoding used in transmission of broadcast information, if the package media interlocked broadcasting / watching / listening system using a broadcast signal receiving apparatus provided by the present invention is adopted, video data of some objects included in a broadcast signal can be replaced by video data of other objects recorded in a piece of exactly resembling package media.

For example, video data of a 1st person appearing in a program and video data of a 2nd person other than the 1st person are each subjected to content base encoding with the 2nd person closely imitating behaviors of the 1st person. The encoded data of the 1st person is broadcasted as part of broadcast information while the encoded video data of the

2nd person is recorded on package media for distribution. If only the broadcast information is received and played back, the 1st person will appear in a program as it is along with other objects such as a background. If the broadcast information is played back in a manner interlocked with the package media, on the other hand, the viewer will be capable of watching and listening to video data wherein the 1st person is replaced by the 2nd person.

The following is a description of a broadcast signal receiving apparatus of the present invention which makes the package media interlocked broadcasting / watching / listening system described above feasible.

Fig. 2 shows the system configuration of a 1st embodiment implementing a broadcast signal receiving apparatus 100 provided by the present invention. As shown in the figure, the broadcast signal receiving apparatus 100 comprises:

a broadcast signal receiving means 101 for receiving broadcast information 201;

a storage means 106 such as a hard disc drive for temporarily storing broadcast information 201 received by the broadcast signal receiving means;

a removable media drive 104 for inputting auxiliary information 301;

an input means 107 for inputting a user intention;

a display unit 108 such as a color monitor for displaying information;

a memory unit 105 used for storing programs to be executed by the processor 102 and temporarily storing data in the course of signal processing carried out by the processor 102.

While it is desirable to put a mountable as well as removable random - access medium such as a CD - ROM, a DVD and an MO in the removable media drive 104, a sequential medium such as a tape is also acceptable as well.

Broadcast information 201 is stored in the storage means 106 in program units. When the viewer watches and listens to a program, broadcast information 201 stored in the storage means 106 is transferred to the processor 102 which then carries out processing such as decoding on the broadcast information 201 by using the memory unit 105 as a work area. A result of the processing is then output to the display means 103. If an index is extracted from the broadcast information 201 during the processing, auxiliary

information 301 indicated by the index is read out from a medium mounted on the removable media drive 104. Processing is then carried out on the auxiliary information 301 and a result of the processing is output also to the display means 103.

It should be noted that means used for furnishing auxiliary information 301 are not limited to media such as a CD - ROM. Auxiliary information 301 can also be supplied to the broadcast signal receiving apparatus 100 by way of a network such as the Internet or a data broadcasting system such as a satellite broadcasting system or a ground wave broadcasting system. In this case, auxiliary information 301 received from a partner on the Internet or a broadcasting station of the data broadcasting system is transferred to the storage means 106 or the memory unit 105 shown in Fig. 2 to be stored therein. In either case, the auxiliary information 301 stored in the recording means 106 or the memory unit 105 is played back in a manner interlocked with broadcast information 201.

Fig. 3 shows the data format of broadcast information 201 received by the 1st embodiment. As shown in the figure, a plurality of program indexes 203 are inserted between pieces of video and audio data of each program. Each of the program indexes 203 includes information such as a program ID 204 for uniquely identifying a broadcast program, a

program name 205 given to the program, a start time 206 of the program, an end time 207 of the program and one or more auxiliary information IDs 208 each for identifying a piece of auxiliary information 301 to be interlocked during an operation to play back the program. In the case of an analog broadcast signal, a program index 203 is embedded in a VBI region of the video signal by using the ordinary NTSC system video signal. In the case of a digital broadcast signal, on the other hand, a program index 203 is broadcasted as a control packet other than the video signal.

It is desirable to insert a plurality of program indexes 203 into a program. This is because, if a program index 203 is inserted into only the head of a program, no program index 203 can be acquired in a recording or playback operation of the program starting from a position after the only one program index 203, making it impossible to play back the program in a mode interlocked with auxiliary information 301 with the auxiliary information 301 used as a supplement to broadcast information 201. By inserting a plurality of program indexes 203 into a program, however, this problem can be solved. A program index 203 may include auxiliary information IDs 208 of all pieces of auxiliary information 301 to be interlocked with the program or include auxiliary information IDs 208 of only pieces of auxiliary information

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301 to be interlocked with the program starting from a point into which the program index 203 is inserted.

Fig. 4 shows the data format of auxiliary information 301 received by the 1st embodiment. As shown in the figure, auxiliary information 301 comprises a plurality of individual auxiliary information pieces 304 and an auxiliary information control table 303 for centrally controlling the individual auxiliary information pieces 304. Each of the individual auxiliary information pieces 304 comprises audio / video data 306 and an auxiliary information index 305 including information for identifying a partner program to be supplemented by the video / audio data 306. The auxiliary information index 305 comprises an auxiliary information ID 307 for distinguishing the individual auxiliary information pieces 304 from each other, the title 308 of the individual auxiliary information piece 304, a partner program ID 309 for identifying a partner program to be supplemented by the video / audio data 306, a supplementation start time 310 with the beginning of a partner program to be supplemented taken as a base, a supplementation end time 311 and time length information 312 of the individual auxiliary information piece 304.

Fig. 5 shows a typical data format of the auxiliary information control table 303. As shown in the figure, the auxiliary information control table 303 is a single

collection of attributes of auxiliary information indexes 305 of all individual auxiliary information pieces 304 and storage locations 401. That is, each line of the auxiliary information control table 303 comprises attributes of an auxiliary information index 305 and one storage location 401. A storage location 401 is an address in a medium or a storage device at which the video / audio data 306 of the individual auxiliary information piece 304 is stored. The auxiliary information indexes 305 cataloged in the auxiliary information control table 303 are sorted by partner ID 309. Note that it is desirable to automatically copy the auxiliary information table 303 into the storage means 306 at the time the medium storing the auxiliary information table 303 is mounted on the removable media drive 104. With the auxiliary information control table 303 copied into the storage means 106, a search of the table 303 for a desired piece of information can be carried out at a high speed.

Next, a package media interlocked broadcasting / watching / listening method is explained. The package media interlocked broadcasting / watching / listening method comprises the steps of:

carrying out a recording operation to record broadcast information 201 into the storage means 106; and

First of all, the recording operation is explained by referring to Figs. 2 to 6. The viewer records broadcast information 201 into the storage means 106 in the same way as a TV program is recorded into a VTR (video tape recorder). In the case of a storage means 106 implemented by a digital information storage means such as a hard disc, an analog broadcast signal is converted into a digital signal such as an MPEG stream by a video capture in the broadcast signal receiving means 101 and the resulting digital signal is then stored in the storage means 106. The viewer is allowed to specify a recording time in the case of reserved recording or unattended recording, or carry out a manual operation to start and end the recording. The processor 102 receives and stores incoming broadcast information 201 in accordance with a request coming from a timer not shown in the figure in the case of unattended recording or a request made by the viewer in the case of manual recording. At that time, the broadcast signal receiving apparatus 100 catalogs the recorded program into a video recording control table 501, a table for cataloging recorded programs, like one shown in Fig. 6. As shown in the figure, each line in the video

recording table 201 comprises a program ID 204 as well as a program name 205 extracted from a program index 203 of the broadcast information 201, a recording start time 504, a recording end time 505 and a recording location 506 or an address in the storage means 106 indicating the beginning of an area for storing the broadcast information 201. It should be noted that the recording start time 504 and the recording end time 505 shown in the video recording control table 501 are times with a program start time 206 of the recorded program taken as a reference. That is to say, the recording start time 504 and the recording end time 505 are obtained by subtracting the program start time 206 from the time the recording is actually started and the time the recording is actually ended respectively.

Next, a typical synthesis / playback operation is explained by referring to Figs. 2 to 7. In order to obtain individual auxiliary information pieces 304 to be used for supplementing a program, a recording medium containing auxiliary information 301 is mounted on the removable media drive 104. When the recording operation described above is not carried out, the broadcast signal receiving apparatus 100 carries out a through operation wherein the processor 102 processes incoming broadcast information 201 and displays the processed broadcast information on the display unit 108 by way of the display means 103 as is the case with

an operation to receive an ordinary television broadcast program. For control purposes, the processor 102 displays a playback button 602 on the screen of the display unit 108 as shown in Fig. 7A.

When the viewer selects the playback button 602 by using a cursor 601 or presses a playback request button provided on the input means 107 such as a remote controller, the broadcast signal receiving apparatus 100 displays a recorded program menu 603 created at that time from the video recording control table 501 on the display unit 108 in order to let the viewer select a program recorded in the storage unit 106 to be played back. The viewer then selects a desired recorded program from the recorded program menu 603 as shown in Fig. 7B by specifying the program name thereof. As the name of the desired recorded program is specified, the video recording control table 501 is searched for the name 205 of the desired program and the program ID 204 thereof is acquired.

Next, the processor 102 forms a decision as to whether or not auxiliary information 201 can be acquired from a recording medium mounted on the removable media driver 104. The decision is formed by determining whether or not the program ID 204 of the selected program acquired from the video recording control table 501 exists as a partner program ID 309 in the auxiliary information control table 303 which

was copied from the recording medium into the storage means 106 when the recording medium was mounted on the removable media drive 104 for the first time. If the outcome of the decision indicates that auxiliary information 201 can not be acquired, that is, if no partner program ID 309 in the auxiliary information control table 303 matches the program ID 204, supplementation of the program by auxiliary information 201 is ignored. The processor 102 then searches the video recording control table 501 using the program ID 204 as a key for the recording location 506. Subsequently, the processor 102 reads out the program from the location 506 to play back it. If the outcome of the decision indicates that auxiliary information 201 can be acquired, that is, if a partner program ID 309 in the auxiliary information control table 303 matches the program ID 204, on the other hand, the matching partner program ID 309 is used for fetching attributes 307 to 312 and storage locations 401 of each auxiliary information index 305 associated with the desired program to be played back from the auxiliary information control table 303. An auxiliary information menu 604 shown in Fig. 7C is then displayed on the screen. It should be noted more than one auxiliary information index 305 in the auxiliary information control table 303 may have a partner program ID 309 matching the program ID 204, that is, more than one individual auxiliary information piece 304

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may be associated with the desired program. As shown in Fig. 7C, the auxiliary information menu 604 includes a table of individual auxiliary information pieces 304 associated with the desired program and a 'Select all' button which is operated if it is desired to specify all the individual auxiliary information pieces 304. Beneath the auxiliary information menu 604, the following buttons 605 to 607 are also displayed on the screen shown in Fig. 7C. The 'Playback auxiliary information' button 605 is selected if it is desired to play back only the individual auxiliary information pieces 304. On the other hand, the 'Playback program' button 606 is selected if it is desired to play back the broadcast information 201 only, ignoring the individual auxiliary information pieces 304. Finally, the 'Synthesis / Playback' button 607 is selected if it is desired to play back the program by supplementing the broadcast information 201 of the program with the individual auxiliary information pieces 304.

Assume that the viewer selects an 'auxiliary information 1' item representing one of the individual auxiliary information pieces 304 listed on the auxiliary information menu 604 and the 'Synthesis / Playback' button 607. In this case, the processor 102 searches the video recording control table 501 using the program ID 204 as a key for a recording location 506, a recording start time 504

and a recording end time 505 of the specific broadcast information 201 to be played back. Then, the processor 102 searches the auxiliary information control table 303 for a recording location 401 of the individual auxiliary information piece 304 corresponding to the 'auxiliary information 1' selected from the auxiliary information menu 604 to be synthesized and played back with the specific broadcast information 201, a supplementation start time 310 and a supplementation end time 311 of the individual auxiliary information piece 304 used in the synthesized playback.

The recording start time 504 of the specific broadcast information 201 to be played back is compared with the supplementation start time 310 of the individual auxiliary information piece 304 to be synthesized. Since the recording start time 504 and the synthesis start time 310 are both given with the program start time taken as a reference, the comparison can be decided to be justifiable. Video and audio data of the information with the smaller start time is played back as shown in Fig. 7D.

An individual auxiliary information piece 304 is played back as follows. The processor 102 compares the supplementation start time 310 of the individual auxiliary information piece 304 with the contents of a timer also taking the program start time as a reference all the time.

As the contents of the timer become equal to the supplementation start time 310, the operation to play back the broadcast information 201 is temporarily suspended and an operation to play back the individual auxiliary information piece 304 is started. As the operation to play back the individual auxiliary information piece 304 is finished, the operation to play back the broadcast information 201 is resumed beginning with a portion at the supplementation start time 310 or the supplementation end time 311 of the individual auxiliary information piece 304. If the operation to play back the broadcast information 201 is resumed beginning with a portion at the supplementation start time 310, the individual auxiliary information piece 304 is merely inserted into the broadcast information 201. A method of synthesis to insert an individual auxiliary information piece 304 into broadcast information 201 is referred to as an insertion type synthesis method. If the operation to play back the broadcast information 201 is resumed beginning with a portion at the supplementation end time 311, on the other hand, the individual auxiliary information piece 304 replaces part of the broadcast information 201 between the supplementation start time 310 and the supplementation end time 311. A method of synthesis to replace part of broadcast information 201 with an individual auxiliary information piece 304 is referred to

as an replacement type synthesis method. The insertion type synthesis method and the replacement type synthesis method will be exemplified in concrete terms later.

If the 'Play back auxiliary information' button 605 shown in Fig. 7C is selected by the user, only individual auxiliary information pieces 304 are played back sequentially one piece after another beginning with one with a smallest supplementation start time 310 shown in the auxiliary information control table 303. If the 'Play back program' button 606 shown in Fig. 7C is selected by the user, on the other hand, only the broadcast information 201 selected from the menu shown in Fig. 7B is played back. In addition, interface buttons 608 resembling buttons on a remote controller used for controlling an ordinary VTR are displayed on the screen as shown in Fig. 7D. The interface buttons 608 allow the user to specify operations to start, halt, temporarily halt, run fast and rewind the playback of the video data. When the user specifies the operation to halt the operation by operating one of the interface buttons 608, the broadcast signal receiving apparatus 100 terminates the operation to play back video data and resets the timer.

In the above description, there is assumed a method whereby broadcast information 201 is recorded into the storage means 106 shown in Fig. 2 in program units and, in

an operation to play back a program, broadcast information 201 of the program is synthesized with auxiliary information 301. If the read / write speed of a hard disc drive used as the storage means 106 is not high enough to keep up with the recording and playback operations, however, part of the memory unit 105 can be used as a buffer between the processor 102 and the storage means 106. The buffer allows the operations to record broadcast and play back information 201 into and from the storage means 106 to appear as if they were carried out concurrently. As a result, the package media interlocked broadcasting / watching / listening method can be applied to a program which is currently being broadcasted.

The buffer cited above works as follows. Broadcast information 201 received by the broadcast signal receiving means 101 is stored in a 1st buffer area in the memory unit 105. As the amount of stored broadcast information 201 reaches a predetermined value, the broadcast information 201 is transferred to the storage means 106 at one time as a batch. While the transfer is being carried out, the operation to store broadcast information 201 received by the broadcast signal receiving means 101 can be continued. In the mean time, broadcast information 201 transferred to and recorded in the storage means 106 is transferred back to a 2nd buffer area in the memory unit 105 in appropriate units

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shows the replacement type synthesis method. As shown in Fig. 8A, in the case of the insertion type synthesis method, the broadcast signal receiving unit 100 plays back auxiliary information 1 denoted by reference numeral 306 after playing back video and audio data 202 of broadcast information 201 denoted by notation M1 till a point of time T1. After the operation to play back auxiliary information 1 is finished, the operation to play back the video and audio data 202 of the broadcast information 201 is resumed starting with a portion M2 at the point of time T1. In this way, auxiliary information 1 is merely inserted at the point of time T1 into the video and audio data 202 of the original broadcast information 201. In the case of the replacement type synthesis method shown in Fig. 8B, on the other hand, as the operation to playback the auxiliary information 1 is finished at a point of time T2; the operation to play back the video and audio data 202 of the broadcast information 201 is resumed starting with a portion M3 at the point of time T2. In this way, auxiliary information 1 replaces the portion M2 between the points of time T1 and T2 of the video and audio data 202 of the original broadcast information 201.

It should be noted that, in an effort made in the actual implementation to adjust timing in a playback operation, auxiliary information 301 is read out earlier

than an accurate start time and stored in a cache memory. By doing so, the auxiliary information 301 can be played back with good timing without causing the viewer to feel a sense of incompatibility. In addition, if interframe encoding is carried out to produce an MPEG stream, a frame on an encoding boundary, that is, an I frame in the case of MPEG encoding, is adjusted to coincide with a boundary between broadcast information 201 and auxiliary information 301.

Next, a 2nd embodiment implementing a broadcast signal receiving apparatus provided by the present invention is explained. In the case of the 2nd embodiment, auxiliary information 301 is also transmitted in the same way as broadcast information 201 instead of being delivered by using a recording medium. Fig. 9 shows the system configuration of the 2nd embodiment. Since, auxiliary information 301 is also transmitted as is the case with broadcast information 201, as shown in the figure, the 2nd embodiment is obtained by omitting the removable media drive 104 from the system configuration of the 1st embodiment shown in Fig. 2. Instead, an information separating program 801 stored in the memory unit 105 is used for separating auxiliary information 301 from broadcast information 201 received by the broadcast signal receiving means 101. A method for acquiring auxiliary information 301 in an operation to record video data is also different from that

adopted in the 1st embodiment implementing the broadcast signal receiving apparatus 100 shown in Fig 2.

An operation to record video data carried out in the 2nd embodiment is explained as follows. The broadcast signal receiving apparatus 100 receives broadcast information 201 and auxiliary information 301 relevant thereto transmitted by a broadcasting station. Fig. 10 shows the data format of the broadcast information 201 and the auxiliary information 201 received by the 2nd embodiment. The auxiliary information 301 is embedded in a program index 203. The processor 102 executes the program 801 to extract auxiliary information 301 from information received by the broadcast signal receiving means 101 and store the information in the storage means 106.

It should be noted that, in some cases, a large amount of auxiliary information 301 can not be transmitted by including the auxiliary information 301 in a program index 203 of broadcast information 201 as shown in Fig. 10 due to broadcasting specifications. In such a case, auxiliary information 301 is transmitted by splitting it into a plurality of packets. Typically, such packets are transmitted in advance independently of the associated broadcast information 201 prior to the time band of the program of the broadcast information 201. The processor 102 employed in the broadcast signal receiving apparatus 100

Next, a 3rd embodiment of the present invention is explained. In the case of the 3rd embodiment, the contents of auxiliary information 301 are a CG program, a sentence written in the HTML or an operation described as a script. In one typical version of the 3rd embodiment, link information described in the HTML is received as auxiliary information 301. Video data generated by a source on the Internet is then acquired by tracing the link and displayed by executing a browser program. In another typical version of the 3rd embodiment, a program for generating and displaying CGs (computer graphics) is received as auxiliary information 301. Then, by directly executing this CG program, CG video data can be displayed. Fig. 11 shows the data format of auxiliary information 301 handled by the 3rd embodiment. As shown in the figure, an individual auxiliary information piece 304 comprises an auxiliary information

information piece 304 comprises an auxiliary information

Unlike an operation to play back video and audio data, the execution time of a program or a script much depends on the performance of the processor 102 carrying out processing and the complexity of a network including a data source indicated by a link specified as auxiliary information 301. It is thus difficult to estimate the length of the execution time. For this reason, the auxiliary information index 305 includes a processing time field 1003. A positive value set in this processing time field 1003 is an effective period of time during which a result of execution of the program or the script 1001 is to be displayed. As the period of time lapses, the operation of the broadcast signal receiving apparatus is automatically switched to an operation to play back video and audio data 202 of broadcast information 201 of the program. On the other hand, a negative value set in this processing time field 1003 indicates that the execution of the program or the script 1001 is continued till an instruction to end the execution is issued by the viewer.

Thus, in the case of a positive value set in this processing time field 1003, the processor 102 keeps monitoring the execution time while the program or the script 1002 of auxiliary information 201 is being executed. By virtue of the 3rd embodiment, it becomes possible to provide the viewer with auxiliary information 301 including computer graphics, numbers, texts and figures in addition to video data by using various kinds of media.

Industrial Applicability

The present invention makes a package media interlocked broadcasting / watching / listening system feasible. In the package media interlocked broadcasting / watching / listening system auxiliary information relevant to broadcast information is distributed by using for example package media and, by playing back and displaying the auxiliary information and the broadcast information synchronously, the broadcast information can be supplemented with the auxiliary information.

P4-11

Claims

1. (cancel)
2. (cancel)
3. (cancel)
4. (amended) A broadcast signal receiving method whereby broadcast information broadcasted during a predetermined time band and received by a broadcast signal receiving apparatus is displayed in a manner interlocked with auxiliary information stored in said broadcast signal receiving apparatus in advance,
wherein said broadcast information and said auxiliary information each include video and audio data, said method comprising the steps of:
storing said video and audio data of received broadcast information in a storage unit employed in said broadcast signal receiving apparatus;
playing back said video and audio data stored in said storage unit; and
stopping the step of playing back said video and audio data stored in said storage unit with predetermined start timing and then playing back said video and audio data of said auxiliary information.
5. A broadcast signal receiving method according to claim 4 further comprising the step of stopping playing back said

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video and audio data of said auxiliary information with predetermined end timing and then resuming the stopped step of playing back said video and audio data stored in said storage unit beginning with a portion of said video and audio data stored in said storage unit immediately succeeding a point of time corresponding to said predetermined start timing.

6. A broadcast signal receiving method according to claim 4 further comprising the step of stopping playing back said video and audio data of said auxiliary information with predetermined end timing and then resuming the stopped step of playing back said video and audio data stored in said storage unit beginning with a portion of said video and audio data stored in said storage unit immediately succeeding a point of time corresponding to said predetermined end timing.

7. A broadcast signal receiving method according to claim 4 whereby broadcast information currently being broadcasted and said auxiliary information are played back at the same time by concurrently storing said video and audio data of said currently broadcasted broadcast information in a storage unit and playing back said video and audio data stored in said storage unit.

8. (cancel)

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Figure 1 consists of 12 histograms arranged horizontally, each representing a different value of n from 10 to 120. The x-axis for all histograms is 'Number of non-zero elements' ranging from 0 to 120. The y-axis is 'Frequency' ranging from 0 to 100. The histograms show that as n increases, the distribution of non-zero elements shifts towards higher values, with the peak frequency decreasing and the spread increasing.

whereby, if said program or said script is not executed in a processing period of time determined in advance, execution of said program or said script is canceled.

11. (amended) A broadcast signal receiving apparatus
comprising:

a storage unit for recording received broadcast information broadcasted during a predetermined program time band;

a read unit for reading out auxiliary information from a recording medium mounted on said broadcast signal receiving apparatus to be played back in a manner interlocked with said broadcast information; and

a processor for playing back said broadcast information recorded in said storage unit and said auxiliary information stored in said recording medium in a manner of interlocking said broadcast information with said auxiliary information by controlling read operations carried out by said read unit with predetermined timing,

wherein broadcast information currently being broadcasted is played back in a manner interlocked with said auxiliary information by concurrently executing operations to record and play back said broadcast information into and from said storage unit.

12. (amended) A broadcast signal receiving apparatus comprising:

a storage unit for recording broadcast information and auxiliary information; and

a processor for controlling an operation to read out broadcast information or auxiliary information from said storage unit with predetermined timing,

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wherein said broadcast information is received through a broadcast system to be recorded in said storage unit and said auxiliary information is received through a broadcast system or a network to be recorded in said storage unit,

wherein broadcast information currently being broadcasted is played back in a manner interlocked with said auxiliary information by concurrently executing operations to record and play back said broadcast information into and from said storage unit.

13. (amended) A broadcast signal receiving apparatus comprising:

a storage unit for recording received broadcast information broadcasted during a predetermined program time band;

a read unit for reading out auxiliary information from a recording medium mounted on said broadcast signal receiving apparatus to be played back in a manner interlocked with said broadcast information; and

a processor for playing back said broadcast information recorded in said storage unit and said auxiliary information stored in said recording medium in a manner of interlocking said broadcast information with said auxiliary information by controlling read operations carried out by said read unit with predetermined timing,

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Art 4-11

Art. 11

wherein said processor stops an operation to play back video and audio data of said broadcast information with predetermined start timing and then plays back video and audio data of said auxiliary information.

14. (amended) A broadcast signal receiving apparatus comprising:

a storage unit for recording broadcast information and auxiliary information; and

a processor for controlling an operation to read out broadcast information or auxiliary information from said storage unit with predetermined timing,

wherein said broadcast information is received through a broadcast system to be recorded in said storage unit and said auxiliary information is received through a broadcast system or a network to be recorded in said storage unit,

wherein said processor stops an operation to play back video and audio data of said broadcast information with predetermined start timing and then plays back video and audio data of said auxiliary information.

15. (amended) A broadcast signal receiving apparatus according to claim 13 or claim 14 wherein said processor further stops playing back said video and audio data of said auxiliary information with predetermined end timing and then resumes said stopped operation to play back said video

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and audio data of said broadcast information beginning with a portion of said video and audio data of said broadcast information immediately succeeding a point of time corresponding to said predetermined start timing so that said video and audio data of said auxiliary information is inserted into said broadcast information.

16. (amended) A broadcast signal receiving apparatus according to claim 13 or claim 14 wherein said processor further stops playing back said video and audio data of said auxiliary information with predetermined end timing and then resuming said stopped operation to play back said video and audio data of said broadcast information beginning with a portion of said video and audio data of said broadcast information immediately succeeding a point of time corresponding to said predetermined end timing so that said video and audio data of said auxiliary information replaces said video and audio data of said broadcast information between said points of time corresponding to said predetermined start timing and said predetermined end timing.

17. A broadcast signal receiving apparatus according to claim 11 or 12 wherein:

said broadcast information includes video and audio data whereas said auxiliary information includes a program or a script; and

said processor plays back said program or said script of said auxiliary information with predetermined start timing in a manner interlocked with said video and audio data stored in and then played back from said storage unit.

18. A broadcast signal receiving apparatus according to claim 17 wherein, if said program or said script is not executed in a processing period of time determined in advance, execution of said program or said script is canceled.

19. A recording medium for storing auxiliary information to be played back in a manner interlocked with a predetermined broadcast program wherein:

said auxiliary information includes a plurality of individual auxiliary information pieces;

the same plurality of individual auxiliary information pieces each comprise video and audio data of said individual auxiliary information piece to be played back in a manner interlocked with a program and an auxiliary information index including an auxiliary information ID for identifying said individual auxiliary information piece as well as a program ID for identifying said program with which said individual auxiliary information piece is to be interlocked.

20. A recording medium according to claim 19 wherein said auxiliary information index of each of the same plurality

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of individual auxiliary information pieces also includes time information for determining timing with which an operation to play back said individual auxiliary information piece in a manner interlocked with said broadcast information is to be started and ended.

21. A recording medium for storing auxiliary information to be played back in a manner interlocked with a predetermined broadcast program wherein:

said auxiliary information includes a plurality of individual auxiliary information pieces;

the same plurality of individual auxiliary information pieces each comprise a software program or a script of said individual auxiliary information piece to be played back in a manner interlocked with a broadcast program and an auxiliary information index including an auxiliary information ID for identifying said individual auxiliary information piece as well as a program ID for identifying said broadcast program with which said individual auxiliary information piece is to be interlocked.

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Art. 11

Abstract

The present invention relates to a broadcasting method and a broadcast signal receiving apparatus wherein auxiliary information such as video and audio data for supplementing broadcast information presented through a broadcasting network in an interlocked manner can be watched and listened to by the viewer.

Broadcast information received from a broadcasting network is temporarily stored in a storage means of a broadcast signal receiving apparatus and a recording medium for storing auxiliary information used as a supplement to the broadcast information is mounted on the broadcast signal receiving apparatus. The broadcast information and the auxiliary information are then played back in an interlocked manner with predetermined timing. As a result, a function to present information which can not be accommodated in a broadcast frame and a pair rental function can be implemented.

FIG. 1

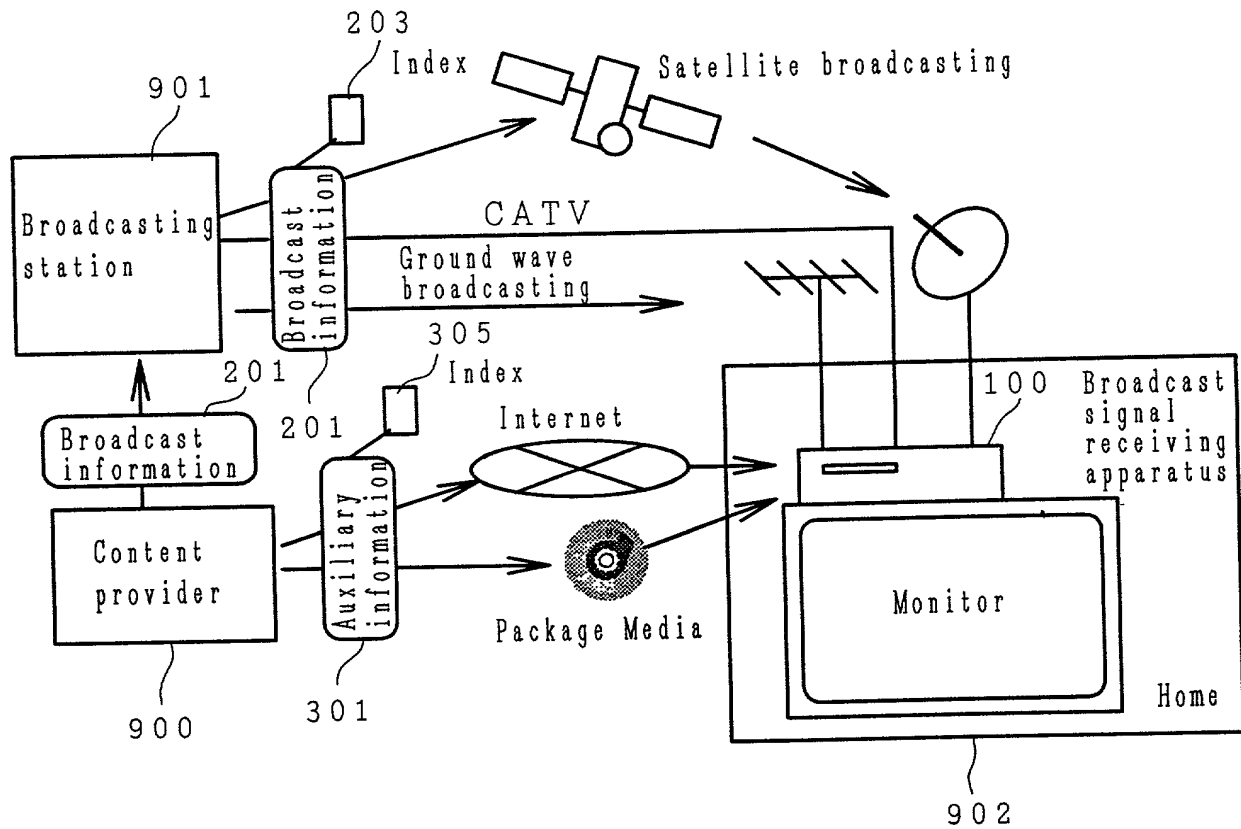
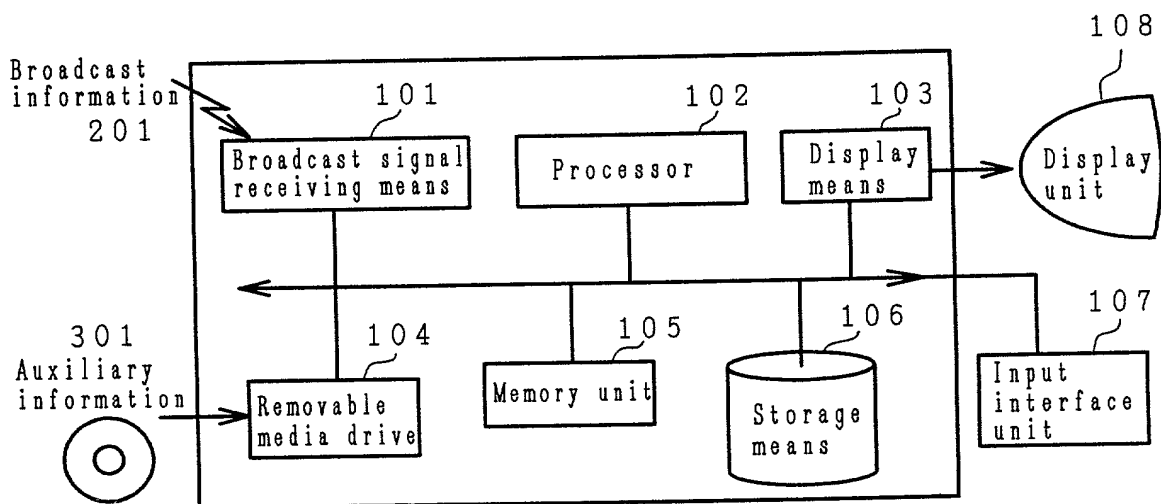


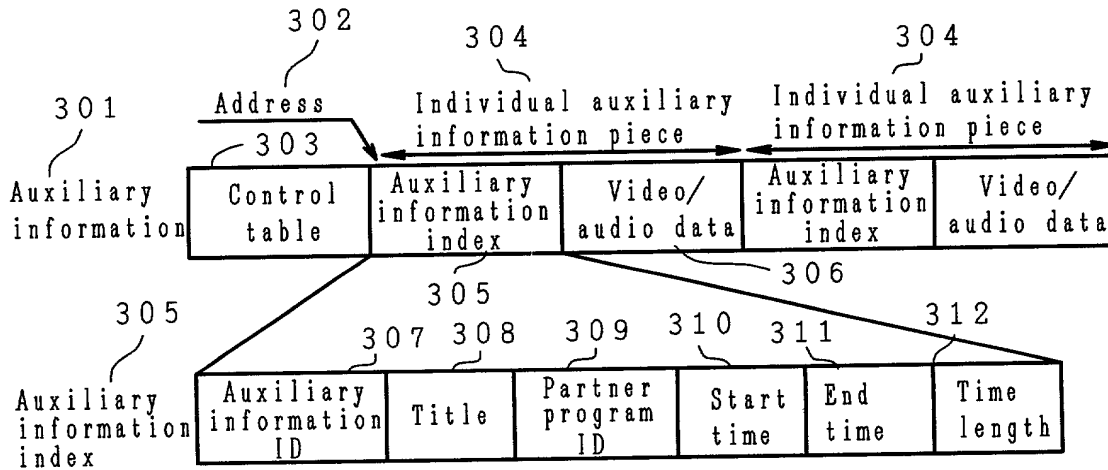
FIG. 2



The diagram illustrates a program structure and its detailed components. At the top, a horizontal bar represents the overall structure, divided into two main sections: "A program" and "Next program".

Below "A program", a sequence of blocks is shown, representing a broadcast program. The first block is labeled "201" and "Broadcast information". This is followed by a series of blocks labeled "202" and "Video/audio data". These blocks are further divided into sub-sections labeled "203", representing "Video/audio data" and "203", representing "Video/audio data".

Below "Next program", a detailed view of a block is shown, labeled "203" and "Program index". This block is divided into several fields: "Program ID", "Program name", "Start time", "End time", "Auxiliary information ID", "Auxiliary information ID", and "Auxiliary information ID".

FIG. 4**FIG. 5**

Control table (303)						
Partner program ID (309)	Auxiliary information ID (307)	Title (308)	Storage location (401)	Start time (310)	End time (311)	Time length (312)
1001	5001	Cut scene 1	Address 1	0:15:00	0:17:30	0:02:30
1001	5002	Special CM	Address 2	0:40:30	0:41:30	0:01:00
1003	5003	Player message	Address 3	1:00:00	1:10:00	0:10:00

FIG. 6

Control table (501)

Control table (501)				
Program ID (204)	Program name (205)	Recording start time (504)	Recording end time (505)	Recording location (506)
1001	News 1	0:00:00	0:30:00	Address 1
1002	Weather forecast	0:00:00	0:14:55	Address 2
1003	Drama 1	0:10:15	1:49:45	Address 3

FIG. 7

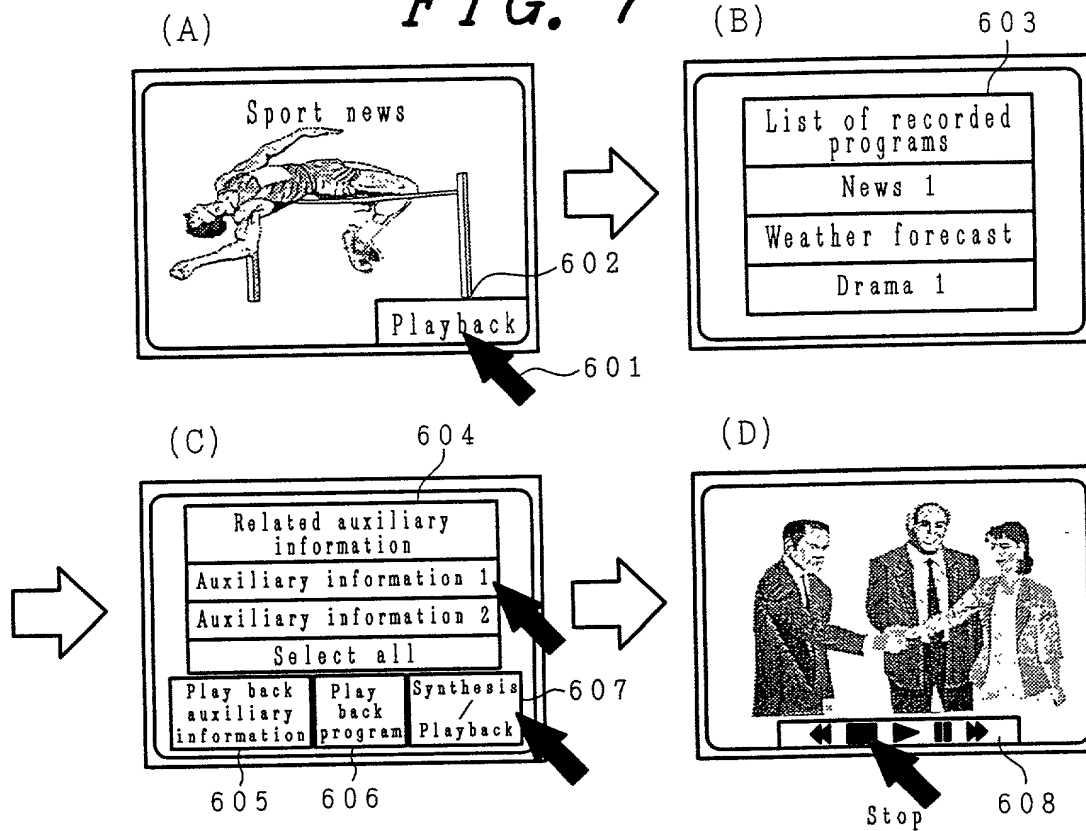
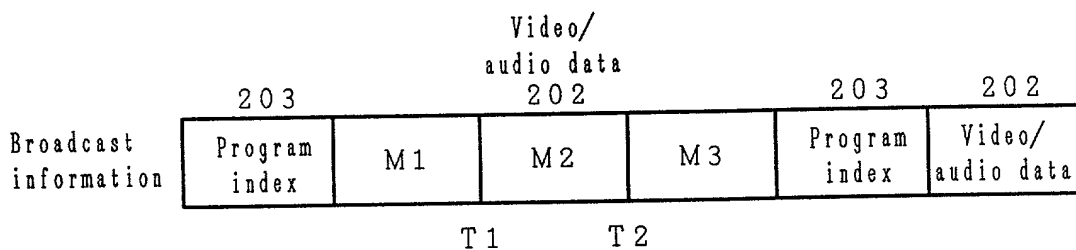
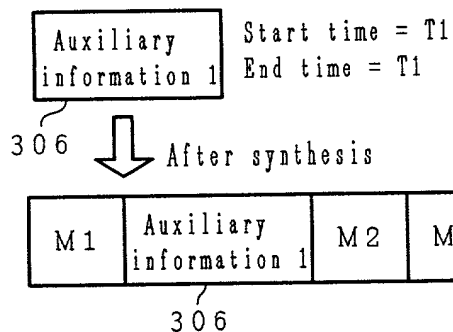


FIG. 8



(A) Insertion type synthesis



(B) Replacement type synthesis

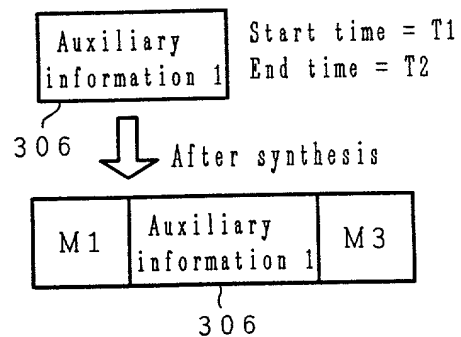


FIG. 9

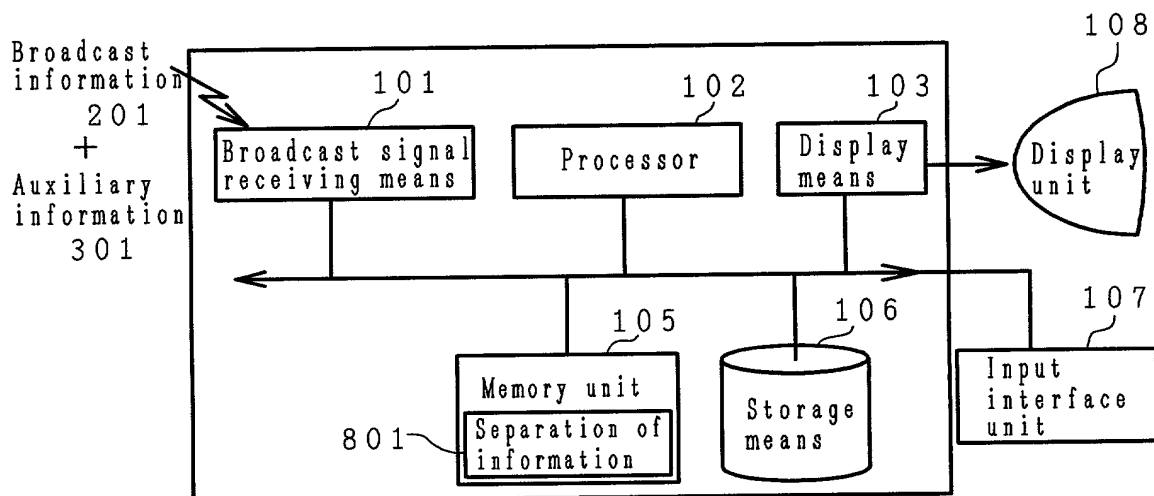


FIG. 10

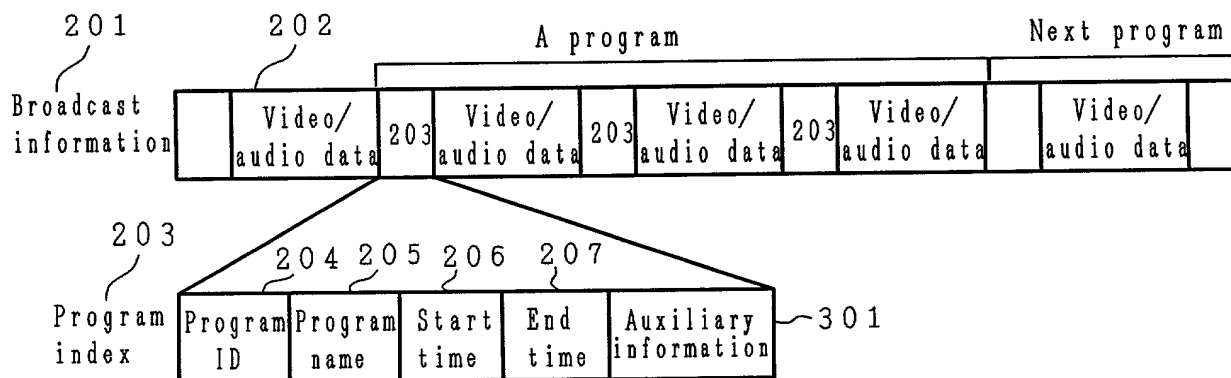
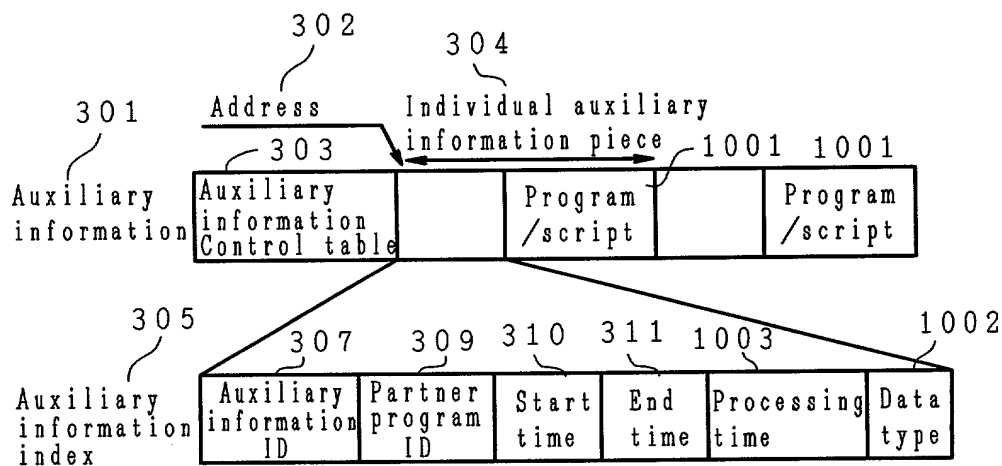


FIG. 11



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Application Number

09/380784

Filing Date

September 9, 1999

First Named Inventor

Yoshito NEJIME

Group Art Unit

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501.37519X00

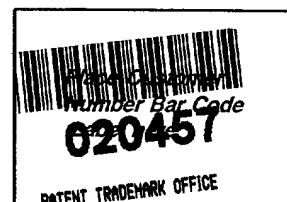
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I hereby appoint as principal attorneys: Donald R. Antonelli, Reg. No. 20,296; David T. Terry, Reg. No. 20,178; Melvin Kraus, Reg. No. 22,466; Stanley A. Wal, Reg. No. 26,432; William I. Solomon, Reg. No. 28,565; Gregory E. Montone, Reg. No. 28,141; Ronald J. Shore, Reg. No. 28,577; Donald E. Stout, Reg. No. 26,422; Alan E. Schiavelli, Reg. No. 32,087; James N. Dresser, Reg. No. 22,973 and Carl I. Brundidge, Reg. No. 29,621 to prosecute and transact all business connected with this application and any related United States application and international applications. Please direct all communications to the following address:

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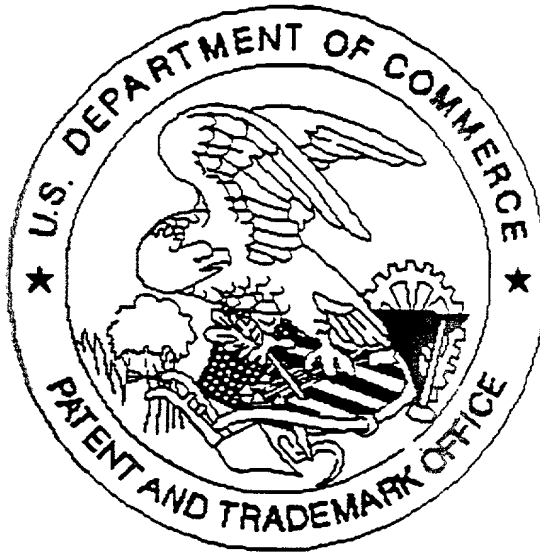
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